Self-regulation: Goals, Consumption, and Choices

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Modern, economic society depends on consumers and their consumption, and in some ways the more they consume, the more successful the economy is. But few consumers can really have all they might want. They have to curb their appetites to live within their financial means (or, if not within the limits of how much money they have, at least within the limits of how much they can borrow). They must restrain their consumption of some goods (such as cigarettes, fattening foods, and alcohol) that are bad for their health if consumed to excess. They have to restrain their consumption of goods (such as violent video games or pornography) that they perceive as a moral threat. They must restrain their consumption of goods (such as illegal drugs) that are illegal.

In short, the consumer’s life is one of restrained consumption. In this chapter, our focus is on those restraints, Self-regulation is the inner psychological process by which people alter their responses to bring them into line with various rules and standards. In this way, it is also the crucial mechanism by which people curb their impulses to consume and keep their consumption within acceptable limits and parameters.

Overviews of the nature of consumer behavior note that setting goals and engaging in actions to attain them are the cornerstone of purposive consumer behavior (Bagozzi & Dholakia, 1999). For instance, investment and savings goals direct consumer spending (e.g., Shefrin & Thaler, 1988) and health goals, such as dieting, lead people to make different choices about caloric intake (Bagozzi & Edwards, 2000).

In this chapter, we detail how the study of self-regulation can explain and predict consumer behavior. Starting with the observation that self-regulation is needed when people deviate or want to deviate from rationality, next we will detail self-regulatory theory by
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specifying three ingredients of (a) standards, (b) the operation of moving oneself from current to desired state, and (c) monitoring one’s progress along the way. Then we move from the basics to applications to consumer matters. Issues closely relevant to consumer behavior that have been linked to self-regulation are: impulsive and compulsive spending, vulnerability to persuasion, the effects of making choices on regulatory behavior, and self-regulation’s role in making good decisions. Please note at the outset that this overview of research on self-regulation will focus only on conscious self-regulation; we do not discuss the increasingly important effects of nonconscious regulatory processes on consumption. This chapter thus provides an understanding of the crucial role of self-regulation in consumer behavior. The relevance of self-regulation lies at the heart of marketing by understanding consumption in order to increase consumer welfare.

**Definitional Issues**

Self-regulation can be understood as the process by which one response is overridden, allowing for a different response to take its place. To regulate something is to bring it under the control of rules or laws, and in the process to change it, and so self-regulation is a matter of bringing one’s own behavior into line with standards such as laws, goals, morals, ideals, or rules. Essentially, the person’s initial impulse may be to act, feel, or think in a particular way that goes against these personal or social standards, and so self-regulation enables the person to resist that impulse so as to respond in a more appropriate or desirable manner.

Self-regulation is most commonly seen in the struggle between impulses and restraints (cf. Hoch & Loewenstein, 1991). Oftentimes, a person will have a goal that requires inhibiting one response and perhaps replacing it with another. Situations that require self-control are those
in which an urge that goes against the person’s overarching goal is stimulated and therefore
restraints to change, modify, or otherwise alter the impulse are required.

We use the terms self-regulation and self-control interchangeably, although other authors
may use them to refer to different constructs. The main distinction that is sometimes made is to
equate self-control with conscious, effortful processes, whereas self-regulation is a broader term
that also encompasses nonconscious regulating processes such as how the body maintains a
constant temperature or heartbeat. Our focus in this chapter will be exclusively on the conscious,
effortful processes by which the self exerts control over its responses, and hence any distinction
between conscious self-control and nonconscious self-regulation is irrelevant to this discussion.

The word “self” in self-control refers both to the fact that it is the self (the “I”) that is
doing the operating and that the self is what is being operated upon (the “me”). Impulses and
urges are two terms also used interchangeably and they refer to a state that arises typically from
the interaction between an underlying motivation (e.g., to increase good feelings) and a stimulus
in the environment (e.g., a shiny piece of jewelry that is available for purchase). There are four
broad domains in which self-control can be exercised (Vohs & Baumeister, 2004a). Mental
control encompasses regulating cognitive processes, ranging from controlling attention (e.g.,
trying to concentrate) to suppressing unwanted thoughts (e.g., Wegner, 1994) and even guiding
one’s reasoning process toward a desired conclusion (Baumeister & Newman, 1994). Emotion
control is essentially the effort to induce, suppress, or prolong an emotional state. Impulse
control typically involves keeping oneself from acting on desires or appetites deemed unsuitable,
whether these be food cravings, addictive yearnings, sexual or violent inclinations, or other
temptations. Last, performance management encompasses the attempt to perform at a certain
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(usually high) level, such as persistence in the face of failure or fatigue, speed/accuracy tradeoffs, or trying not choke under pressure.

We start with an example that illustrates the ingredients of self-regulation. A young man wants to buy a pickup truck but cannot afford it. He assesses how much money he has and what he needs to buy the truck, which indicates how much more money he need to have. Accordingly, he forms a plan to save some money from his weekly paycheck, which will enable him to afford the truck in time for, say, a planned camping trip next summer. Along the way, however, he may have to resist temptations to spend his income on a new stereo system. His success depends on monitoring his progress at saving money while also resisting these intervening temptations.

The example of saving up to buy includes the four main ingredients of self-regulation. First, one has to have a goal, in this case to save enough money to buy the truck. Second, one has to be motivated to reach the goal: The more he wants the truck, the more likely he is to be willing to make the efforts and sacrifices required to save. Third, he has to monitor progress toward the goal, rather than just vaguely stuffing a few bucks into various envelopes scattered in his desk and sock drawer now and then. (In particular, he has to keep track of how much he has saved and how much he needs, plus ideally whether he is on schedule of saving enough to get the truck in time for the camping trip.) Last, he will need the willpower to resist other temptations in order to keep saving toward his goal.

Standards

Standards are the ideals, norms, goals, or other rules or guidelines that provide the endpoint of the regulatory chain. Akin to the idea that the first step in the buyer decision process involves consumers recognizing that they have an unmet need, self-regulators’ first step is to
recognize that there exists a standard that they want to meet. Typically, this step is accompanied by an almost-immediate comparison to see where one is located with respect to the standard. (We return to the idea of monitoring in a subsequent section.) Assuming there exists a difference between current and goal state, the person needs self-control. If there is no discrepancy, there is no need for self-control. Much of the strain on self-regulation can sometimes be alleviated by modifying standards. For example, whereas many people struggle to lose weight so as to conform to social standards of fashionable thinness, some instead join the so-called size-acceptance movements that essentially say it is OK to be fat. In the same vein, recent decades have witnessed a marked reduction in the social stigma associated with bankruptcy and with out-of-wedlock reproduction, thereby reducing the demand on people to regulate their behavior as tightly as they may have in past decades to avoid those outcomes.

The more specific the standard, the better able people are to reach the goal. Specificity in setting the goal helps at two levels. One, being specific about the goal reduces the goal’s abstractness, which clarifies the steps needed to reach the goal (see Gollwitzer, 1999; Gollwitzer & Brandstätter, 1997). Instead of trying to reach the abstract goal to “save money,” the consumer who sets the more concrete goal of “forgoing a latte three times a week” is better positioned to reach the ultimate goal of saving more money.

Two, specific goals (or the creation of subgoals) allow for better monitoring of progression toward the goal. With a precise endpoint, one can see how to measure current states and distance to the goal. Grocery shopping with a list makes it easy to see which foods still need to be acquired by looking at which foods are already in the cart. In addition to having a specified goal, having only one goal makes self-regulation more successful than when people have two or
more conflicting goals. Research on children similarly shows that when adults give different and inconsistent rules to children, the children behave inconsistently (Maphet & Miller, 1982).

In general, having clear standards is a benefit to goal attainment, but new research suggests that holding highly rigid standards can at times lead to worse self-regulation. Research by Somon and Cheema (2004) found that when people violated a standard they had set for themselves, their subsequent goal-directed behavior faltered – with the result being even worse than the performance of people who held no performance standards. The researchers found that a feeling of failure from the violation of standards was key, especially when goals were perceived as being “all of none.” This deleterious outcome is best avoided by choosing moderate standards: Standards that are too low may not motivate people, but those that are too high may demotivate people via the potential for perceptions of standard violations and concomitant feelings of failure. Baumeister, Heatherton, and Tice (1994) compared the stringent, so-called “zero tolerance” standards to a military tactic of putting all one’s troops on the front line. It offers the best chance of preventing any breach, but it leaves nothing in reserve to cope when a breach does occur. They suggested, for example, that the zero tolerance approaches help explain the seeming paradox that the United States has relatively high rates of both teetotalers and alcoholics, in contrast to other cultures that emphasize controlled drinking as the standard.

One motivational theory that has had widespread success in predicting consumer behavior centers on differences in behavioral guides. *Promotion* behavior pursues positive outcomes, whereas *prevention* behavior avoids negative outcomes (Higgins, 1997). *Promotion* behavior is aimed at achieving ideal standards, such as hopes, wishes, and dreams. *Prevention* behavior is geared toward goals that people feel obligated to achieve, such as duties and responsibilities. Research has shown that when people are in a promotion mode and geared
toward goal attainment, their actions are best described as eager, whereas when people are in a prevention mode, vigilance is the best descriptor of behavior.

Moreover, if a situation calls for a strategy that contrasts with the type of goal being pursued (e.g., a promotion goal that is pursued by being vigilant), people fail to achieve their goals more often than when goal types and behavioral strategies are matched. Recent research suggests that promotion and prevention may not only be suited for certain strategies, but for information processing routes as well. Research by Pham and Avnet (2004) revealed that ideal standards bias people’s reactions in terms the emotions evoked by incoming information, whereas ought standards lead to processing a message based on its content. That different standards activate different psychological systems (affect versus cognition) has broad implications for behavioral change strategies: This finding, in addition to information such as knowing whether a woman seeks to lose weight because of her dreams of fitting into a shapely swimsuit or because her partner told her to do so will help predict whether her diet will be upset by a distressing incident versus new findings indicating that weight is more genetic than people once thought (i.e., emotional versus cognitive information-processing styles).

One type of goal conflict occurs when people come up against a seemingly unattainable goal. Outside the laboratory, it is often difficult to know whether one’s goals are unattainable or unrealistic. A lack of progress toward the goal may be the first sign, but such signs are hard to read. For example, consider the thousands upon thousand of young men who sacrifice years of their lives, plus their best educational opportunities, plus their physical well-being in pursuing the goal of becoming a professional athlete. The immense rewards associated with such success make the dream appealing, and the young men can see exemplars who have achieved that level of success on television any time. But far more than 99% of those who pursue the dream will
fail, and it may take a very long time (often until one has spent five years in college, with no degree) to realize that one is never going to succeed at that level.

Wrosch et al. (2003) showed that people who disengage from seemingly impossible goals are mentally healthier than those who stay entrapped in the pursuit of this type of goals. In this case, the goal of using one’s limited effort and time effectively conflicts with trying to achieve the impossible, and the healthiest strategy is to drop the frustrating goal. Although little is known about when people consciously decide to abandon a goal (cf. Shah, Bodmann, & Hall, 2005), this line of research has much theoretical and practical importance.

Another type of goal conflict is probably endemic to consumer behavior, because almost all consumers face a variety of tradeoffs in which they want incompatible things. Most fundamentally, perhaps, consumers want to save their money but also to acquire goods and services. And even if they are determined to purchase, there are endless further tradeoffs: higher quality versus lower price; sensible comfort versus fashionable looks; name brand reputation versus more immediate availability; higher safety rating versus better gas mileage; less filling or great taste. Rational choice is supposedly the human cognitive tool for making such choices, but recent evidence suggests that requires effort and consumes some of the same resources required for self-regulation, as we will explain shortly.

Motivation and Commitment; Or, the “Gun to the Head” Test

Having standards does not mean that good self-regulation will necessarily follow. Recall that people may have standards but perceive that their behavior already meets these standards. Others may see that they fall short of standards but not care. People must be motivated to enact a
behavioral change. The motivation to self-regulate is probably crucial to its success, although it is probably the least studied of the four basic ingredients.

How common are irresistible impulses? Some people claim - and some legal institutions condone – that under some circumstances, impulsive actions may not be controllable due to either strong emotional states or other internal breakdowns of will. Self-regulatory researchers generally find these claims dubious. Suppose, for example, that a compulsive gambler were truly unable to resist the temptation to gamble. Taken to an extreme, this would mean that if a gun was held to the head of the person who was about to lay down another bet at the blackjack table, he or she could not help but place that bet. Yet, this rarely (if ever) happens: People, if they really want, are able to avoid giving into all kinds of impulses (Baumeister & Heatherton, 1996). One of the FBI’s foremost experts on serial killers observed that although the killers sometimes claimed that their homicidal impulses were irresistible, not one of the thousands of murderers documented by this group had been committed in the presence of a police or security officer (Douglas, 1996). Apparently the irresistible impulses could be resisted if the chances of getting caught right away were high.

Considering the truly irresistible impulses is a good way to appreciate the contrast. A person cannot remain standing forever, and sooner or later will sit, lie, or fall down, even if threatened at gunpoint to remain standing or else. People cannot hold their breaths indefinitely, and even if the willpower is sufficient to keep them from breathing for a long time, they will pass out and start breathing. They cannot remain awake indefinitely, and some people die because of falling asleep on sentry duty or while driving. There are of course a few other bodily functions that are likewise truly irresistible, and it is appropriate to refrain from blaming people who break down under such circumstances. In contrast, the spouse who ruins the family’s monthly budget
by spending an inordinate amount on a new jacket, and who seeks to justify the act by saying “I couldn’t resist,” is almost certainly speaking merely figuratively (which is to say lying).

For consumer behavior, the important implication is that purchasing impulses are in fact almost always resistible. But consumers may prefer to conceal that fact from themselves and their families. “I had to have it, I couldn’t help myself” is much preferred over the more realistic “I deliberately chose to blow a lot of our money on selfish gratification for myself.”

People may get the motivation to control themselves from the situation; the crime examples illustrate the power of external punishments. Or rewards may drive the motivation to control oneself. Some empirical work has found that even when the ability to engage in self-regulation is significantly impaired, people can nevertheless control themselves when an incentive is offered, such as money or believing that one’s self-control efforts will be a benefit to oneself or a vulnerable group (Alzheimer’s patients) (Muraven & Slessareva, 2003).

The outcome of the self-control endeavor may be a sufficient enough prize to encourage controlling oneself. A model of self-regulation from the health domain (Rothman, 2000) describes the desire to initiate a behavioral change as stemming from the positivity of the outcome. Thus, most people believe that smoking cigarettes is bad for them, and many have quit smoking in order to improve their odds of avoiding lung cancer in later life, but others may not value that outcome. Teenagers who disdain old-age health issues as absurdly remote, soldiers in combat zones who doubt their chances of surviving the war, prisoners serving life sentences, and AIDS sufferers, among others, may not find the increased chance of escaping lung cancer in the distant future a sufficient reason to give up the pleasure of smoking.

Motivation may come from perceptions of the difficulty (or possibility) that the goal can be attained. One model that focuses on outcomes derived from consumption (Bagozzi &
Dholakia 1999) places self-efficacy at center stage, such that people’s beliefs about the skills they possess to achieve their goals is crucial to their willingness to self-regulate. This model emphasizes self-efficacy as being key to whether and how the consumer will approach the self-control task. Self-efficacy is particularly related to the means chosen to reach the goal. Thus, if a person considering a diet thinks, “If I am offered cake at parties, I am confident that I can refuse and instead I eat fruit,” he or she is displaying self-efficacy and its aid in selecting suitable means to attain the larger goal of limiting caloric intake.

Research on the overconsumption of food (binge eating) supports the importance of self-beliefs in motivating people to self-regulate — as well as the demotivating effects of not believing in oneself. This research shows that women who hold high standards for thinness but believe that they are overweight have high binge eating tendencies – but only if they also doubt their ability to reach their goal (Vohs et al., 1999; 2001). Women who believe that they close the gap between their current (perceived) body image and their desired body image do not overeat.

Last, motivation may also depend on beliefs about how self-control works. Recent work suggests that laypersons have personal beliefs about how self-control operates (Mukhopadhyay & Johar, 2005). Moreover, personal theories about self-control can help predict variance in goal attainment, presumably because they influence commitment to self-regulatory goals and subsequent motivation.

*Monitoring and Feedback Loops*

Monitoring involves being aware of the self’s behavior or responses and comparing them to a standard. Breakdowns in the monitoring aspect of self-regulation are not as well understood as are breakdowns in the other ingredients, but nevertheless breakdowns in monitoring are a key
reason that goals are not met. Monitoring is perhaps more central to understanding consumption than other aspects of goal attainment, which suggests that more work could be done to underscore its value in consumer behavior.

The study of monitoring is also worth pursuing for practical reasons. Baumeister et al. (1994) proposed that monitoring is the aspect of self-regulation that is most readily susceptible to improvement, and so whenever one desires to improve self-control, improving monitoring generally offers the most promising opportunity for substantial (and immediate) improvement. Thus, if someone has money problems, it may be difficult to increase income or willpower, and revising standards downward (to accept being on the verge of bankruptcy) may be problematic. Nonetheless, keeping close tabs on one’s income and expenses, such as by keeping a daily written record of spending, is often both viable and effective. Likewise, it is no accident that successful dieters count calories and otherwise carefully monitor what they eat, and that the cessation of monitoring often undermines dietary efforts.

One reason (and there are many!) for the difficulty of self-control is that effective self-control necessitates that people monitor their behavior, but the act of monitoring means a focus on the present time (Vohs & Schmeichel, 2003). This ‘extended-now’ state renders people vulnerable to incoming urges and impulses and makes long-term goals seem less pressing. This extended-now theory of self-regulation is supported by studies showing that self-regulation changes time perception, such that self-regulators feel that time is moving more slowly as compared to non-regulators (and as compared to veridical durations). Monitoring one’s progress, although being an integral part of goal strivings, may unfortunately bring about perceptions that time is moving slowly, which in turn reduces self-regulatory efforts (Vohs & Schmeichel, 2003).

Classic work on chronic dieters demonstrates that not only the reliability or strength of
the signal is important in monitoring, but also the interpretation of the feedback. Research on dieting versus nondieting shoppers shows that dieters buy less when they have not eaten recently than when they have eaten recently, whereas the opposite pattern holds with nondieters (Nisbett & Kanouse, 1969). Why would dieters buy less when they are hungrier? The idea is that the bodily signals that one has not eaten in a while is a positive, reinforcing signal that the goal of limiting caloric intake is being met. Therefore, dieters – who have the goal of restricting caloric intake – buy less food when they get feedback that they are meeting their dieting goals.

As another example of how interpretation can undermine monitoring, Gilovich (1983) addressed the seeming paradox that many gamblers continue to gamble and even seem to remain optimistic, even though most lose more than they win and in fact long-term net losses are almost guaranteed by the structure of the gambling system (by which, for example, the casino or indeed the state government must make a net profit, so it pays out less in winnings than it takes in). Accurate monitoring would have to reveal to gamblers that they had lost more often than won. But Gilovich (1990) found that gamblers discounted some losses as “near wins” and so felt encouraged despite losing. They were much less likely to discount their wins as “near losses.” By taking credit for all successes and discounting some wins, they were able to transform the objective feedback of overall loss into the subjective impression of efficacy and confidence at “continued” success.

Monitoring allows people to assess distance to the goal. This can be done by looking back at how far one has come or how much more has to be done. A new study suggests that seeing how far one has come may be more effective in promoting self-regulation than how much more work is ahead. Nunes and Dreze (in press) gave loyalty cards to customers at a professional car wash. Some customers were given a card that required 10 car wash purchases before one free
car wash was earned, whereas others were given a loyalty card that required 8 car wash purchases before the reward. However, those in the 10 car wash condition were given their card with two “free” stamps already affixed to it, making the amount of effort needed to reach the goal equivalent. Perceptions of progress mattered, though – 34% of customers filled their card and earned a free car wash in the 10 washes-but-2-free condition, whereas only 19% did in the 8 washes condition. Moreover, the goal gradient was steeper for those in the 10-but-2 condition, such that after receiving the loyalty card, they came to the car wash more often than did the 8 wash condition customers. Believing that one has come a long way apparently increases commitment to the goal, thereby leading to heightened efforts to reach it.

Operations: Using Self-Regulatory Strength to Move Oneself to the Goal

Even if a consumer has clear, unconflicting, and appropriate standards and monitors his or her behaviors, the goal will not necessarily be met. Without the capacity to move oneself from current to goal state, the best laid plans and all the monitoring in the world will not be good enough. The strength model of self-control has been the most comprehensive model in terms of specifying what allows people to move toward a goal. Self-regulation, from this perspective, is governed by a finite supply of energy that is used in all controlled responses and actions (Baumeister & Heatherton, 1996; Baumeister et al., 1994; Vohs & Baumeister, 2004b).

The strength model depicts the ability to get oneself to the goal as a function of the amount of self-regulatory resources available when exhibiting the response. Because self-regulatory resources are put toward all acts of self-control, the supply is rather fragile and precious and, according to the model, can diminish to a point where impaired self-control can be observed. Therefore, laboratory experiments testing the strength model of self-control typically
have used a two-task paradigm. The first task varies on its self-control demands such that some participants are given a task that is thought to require expending self-regulatory resources, whereas others are given a neutral task that does not require self-regulatory resources. The second task, then, is the measure of self-control ability. To test the strength model, the hypothesis put forth is that differences in the second task reveal that the experimental condition in the first task was indeed an act of self-control that presumably depleted the self’s resources. Indeed, the work of over 30 published experiments (e.g., Baumeister et al., 1998; Muraven et al., 1998; Schmeichel, Vohs, & Baumeister, 2003; Vohs, Baumeister, & Ciarocco, 2005; Vohs & Heatherton, 2000) supports the idea that the “operate” component of self-regulation can be modeled as a stock of energy that becomes temporarily reduced with use, with the consequence being disrupted self-control. Several extensions of the model that are particularly applicable to understanding consumer behavior are discussed hereafter.

Early investigations of the model focused on confirming basic tenets. Here, researchers took core self-control tasks, such as persisting at a different task, controlling one’s emotions or suppressing thoughts and tested whether engaging in these activities left people with less ability to engage in another self-control act. For instance, Baumeister et al (1998) asked participants to control either emotions to an emotional film, or to watch the film naturally (without instructions). Subsequently, they were given a set of difficult anagrams to solve. In line with expectations from the strength model, participants who had to modify their emotions solved fewer anagrams. Notably, both a happy and sad film were used and type of film did not affect anagram performance; only being in a condition that required emotional modification mattered.

Manipulations of thought suppression complemented these findings. One experiment asked participants to suppress thoughts of a white bear (Wegner, Schneider, Carter, & White,
1987) versus complete simple mathematical problems showed that the former group was less able to control their emotions later when asked to do so (Muraven et al. 1998; Study 3). A host of similar studies confirmed the basic tenets of the model using a variety of different manipulations and dependent measures. Therefore, we have concluded that self-regulation relies on a precious, but finite, resource that is taxed when self-control is needed. The term “regulatory resource depletion” is now used to suggest phenomena when one does not have the strength to exert proper control over one’s actions.

An important extension of the regulatory resource model indicates that the same resource is used for making choices. A series of studies by Vohs, Baumeister, Twenge, Schmeichel, and Tice (2005/under review) showed that after people make a series of choices, their self-control falters and fails just as it does following prior exertions of self-control (see also Baumeister et al., 1998). In particular, participants in several studies were asked to make a series of binary choices between various consumer items (e.g., would you rather have a red or a blue t-shirt? Would you rather have a vanilla scented candle or an almond scented candle?). Others simply rated the same items on various dimensions, including whether they had used them in the past six months. Those who made choices were subsequently poorer at self-control on a variety of measures, including holding one’s hand in ice water or making oneself consume a healthy but bad-tasting beverage.

Because the same resource appears to be used for both decision making and for self-regulation, Baumeister et al. (1998) introduced the term “ego depletion” to refer to the state of diminished resources. The term “ego” was adopted in a deliberate homage to Freud, who was one of the only psychologists to speak (albeit rather vaguely) of the self as an energy system.

For consumer psychology, the implication is that two perennially central issues in
consumer behavior — namely decision making and self-control — rely on a common resource that becomes depleted when one engages in either activity. Hence either activity can have an adverse effect on the other. Making effortful decisions is likely to impair subsequent self-control, and, conversely, exertions of self-control may reduce the care and effort that people put into their subsequent choices. Examples of both patterns will be covered below.

APPLYING THE STRENGTH MODEL TO CONSUMER ISSUES

Overeating

Eating is one of the most fundamental consumption acts. People must eat to survive, and yet society, dietary, and health reasons prompt many people to regulate their caloric intake at some point in their lives. However, the outlook for people wanting to lose weight and maintain their slimmer size is dim: comprehensive long-term research (Kramer, Jeffery, Forster, & Snell, 1989) revealed that fewer than 3% of all dieters will manage to keep the weight off and by five years after their weight loss most will weight more than they did when they began dieting.

Thus, the concept of limiting food intake is a tantalizing topic for self-control theorizing because, unlike other consumption domains such as drinking alcohol, smoking cigarettes, or even having sex, people need to take in calories to live. Consequently, achieving the goal of losing weight by cutting caloric intake cannot be met using the same strategies as could be used to limit alcohol intake, namely refraining from consumption altogether.

Thus neither the advantages nor the inherent problems (see above) of zero tolerance self-regulation policies are relevant to eating, and controlled moderation is the only viable strategy for controlling food intake. Stopping oneself from taking in any calories is a route that no one
can take with landing in the hospital, which therefore means that people wanting to control their food consumption must use other strategies. Consequently, the intricacies of dieting make it one of the most perplexing and difficult regulatory tasks that one may take on.

Being exposed to forbidden foods is a situation that many dieters face and if they intend to stick to their diet, they must override their desire to eat the tempting food. Baumeister et al. (1989) recruited a sample of hungry undergraduates (but who were not selected because they were dieters) and created a situation to mimic the forbidden-food situation that dieters often face. Participants were seated in front of a tray of freshly baked chocolate chip cookies that had been recently baked in the laboratory, with the aroma of warm chocolate wafting throughout the room for everyone to smell), chocolate candies, and a rather large bowl of radishes. Some participants were told they could eat as many of the cookies and candies as they wanted, whereas participants in the forbidden-food condition were told that their task was to eat the radishes. (There was also a no-food condition.) After five minutes of privacy with the foods, participants were given a geometric puzzle to solve, which was unsolvable, although of course they did not know this. Persistence in the face of frustration and disappointing failure is one standard measure of self-regulation, because the vexing failures presumably create the desire to quit so as to do something else instead, and in order to persist the performer must override this urge to quit. Participants in the forbidden-food condition were less persistent at the puzzle as compared to participants in either of the other two conditions. Being tempted by the chocolates but not being able to indulge presumably taxed the resources of those participants, which therefore impaired their ability to continue on the difficult cognitive task.

Another set of studies examined the effects of self-regulatory resource depletion in a context in which people have pre-established consumption goals. In these studies, chronic dieters
were the main focus, and the hypothesis was that underlying differences in long-term goals render people differentially affected by the same situational self-control demands. Vohs and Heatherton (2000) asked dieters and nondieters to watch a boring video on Bighorn sheep while being seated either next to or far away from a tempting bowl of M&M candies. This formed the temptation factor, which was combined with instructions that the candies were available to be eaten (“go ahead, help yourself”) or that the candies were needed later in the day, and therefore “please don’t touch” them. After watching the boring video for 10 minutes, participants were moved to a different room to “taste and rate” three flavors of ice cream. Ice cream consumption was the measure of self-control.

Given that nondieters do not (by definition) control their caloric consumption, they would not have to override the temptation (and hence become depleted) to eat the yummy chocolates. (That said, it was not the case that the nondieters consumed many M&Ms - only five nondieters ate the snacks and even they did so minimally.) Hence, nondieters’ ice cream intake was predicted to be relatively unaffected by the two factors of temptation and allowance to eat the snacks. For dieters, however, the urge to eat the chocolates must be acted on. Therefore, Vohs and Heatherton expected that only dieters would expend regulatory resources in the presence of tempting snacks. However, if an external force prevented them from having to exert self-control to not eat the candies – such as a caution from the experimenter to not partake in the snacks – then their supply of self-regulatory resources would be spared. As a result, the researchers predicted that ice cream consumption would be highest among dieters who sat close to the snacks and were allowed to eat them.

The predictions were confirmed. Dieters ate significantly more when they were highly tempted by sitting next to the M&M candies and were told the candies were available to be
eaten. Notably, however, dieters ate the least when they were seated far from the chocolates and were told they could indulge in them (which, being dieters, they did not). This pattern may represent an inoculation effect, which would be an intriguing idea for future depletion research. And as expected, nondieters’ ice cream eating was not determined by whether they had sat near or far from the M&Ms nor whether they were allowed to eat the candies.

A second study replicated the loss of self-control among dieters after having engaged in emotion regulation (Vohs & Heatherton, 2000). In this experiment, dieters watched a sad movie about a woman on her deathbed saying good-bye to her husband, two sons, and mother. Participants were asked either to suppress their emotions or to watch the movie naturally. Ice cream eating again represented self-regulatory ability. As expected, asking these women to engage in emotion regulation, as opposed to being able to watch the same movie but without having to suppress sad feelings, led them to eat more ice cream later. Both groups reported similarly negative feelings after the movie, meaning that differences in mood did not account for eating differences, but having to stifle those feelings led to a depletion of the resource that later would have helped them control their ice cream consumption.

A third study showed that persistence drops after dieters have had to overcome the temptation of forbidden foods. In this study, being highly tempted by an array of snack foods led subsequent persistence on an embedded-figures task to be impaired, relative to persistence among dieters who watch the same boring film and looked at the same snack foods but who did so from across the room.

Thus, regulating the consumption of food determines and is determined by the availability of self-regulatory resources — but only among people for whom caloric regimens were highly important and thus demanded much regulation. Moreover, having to defeat the
desire to eat a tempting, but forbidden, food in order to make oneself eat a less appealing, but healthier, food also takes away from the capacity to later bring one’s performance in line with standards.

Overspending: Impulsive purchases

Just as controlling one’s eating represents a special kind of self-control problem, so does spending. If one includes the paid consumption of energy and utilities such as water, the typical modern citizen spends money every day. Much spending is fairly inevitable, and other spending is appropriate and judicious. Still, some money is spent impulsively and in ways that the consumer may later regret. Vohs and Faber (2005) turned to the self-regulatory resource model to help explain why people spend money impulsively.

Impulsive buying is defined purchases that result from an urge that arises spontaneously within the consumer to buy. In impulsive purchasing, the desire to purchase is unreflective (Strack, Werth, & Deutsch, in press) and not based on any careful considerations of why the product should be acquired (Rook & Fisher 1995). Vohs and Faber surmised that impulses to buy would arise and be acted upon more often when people’s self-regulatory capacity is reduced than when it is fully intact. The results of empirical work support this idea.

Two studies manipulated attentional control demands as a way to alter self-regulatory ability. Participants watched an audioless video of a woman being interviewed that, at the same time, showed irrelevant words appearing at the bottom of the screen every 30 seconds. Some participants were not told anything about the irrelevant words, whereas those in the depletion condition were told not to look at the words and if they found themselves orienting toward the words to revert their eyes back to the interviewee. In one study, participants were then given a
scale to measure immediate buying impulses; in another study, participants were shown high-end products (e.g., watches, appliances) and asked to state the price at which they would be willing to purchase the item. Both studies showed an effect of self-regulatory resource availability on impulsive spending tendencies: participants who had earlier used their resources to orient their attention away from a distracting stimulus later reported stronger urges to spend impulsively (Study 1) and gave higher willingness-to-pay rates (Study 2), as compared to participants who did not engage in attention control. Feeling a spontaneous urge to buy is, as we saw earlier, the root of impulsive spending, and one way to control that urge is to believe a product is not worth its monetary price (Rook & Fisher, 1995). That self-regulatory resource depletion affected impulsive spending tendencies both at the level of the impulse and the cognitive strategies to rein in that impulse is noteworthy.

Moreover, this research found that actual impulsive spending was affected by resource availability. One of these studies asked participants in the resource depletion condition to suppress thoughts of a white bear; the other study asked participants to read aloud a boring text with emotion. Subsequently, participants were given the opportunity to buy in a spontaneous, ad hoc purchasing situation in a mock store. As predicted, participants whose resources had been depleted spent more impulsive than did participants who had not expended their resources. This effect was found in terms of purchases of bookstore-like products, such as school insignia pens, coffee mugs, and decks of playing cards (Study 3) as well as grocery store items, such as cookies, pretzels, and potato chips (Study 4).

Moreover, the latter two studies incorporated the idea of underlying tendencies toward a certain type of self-control failure, in a similar manner as was done in the work on chronic dieters (Vohs & Heatherton, 2000). In this work, however, generalized tendencies to want to
spend money impulsively were measured prior to the experimental manipulation of self-regulatory demands. Similar to the findings on dieters, Vohs and Faber (2005) also found that the effect of self-regulatory resource depletion was exacerbated among people who normally feel strong desires to buy impulsively. In contrast to the work on dieters versus nondieters, however, was the fact that even participants who are low in general impulsive spending tendencies showed heightened purchasing behavior when depleted. This effect is probably due to the idea that nondieters and nonimpulsive spenders differ in that almost everyone needs to control their spending at some level, irrespective of whether buying impulsively is generally a problem, whereas nondieters are presumably not controlling their eating to the same extent.

Hence, spontaneous urges to buy something too are affected by self-regulatory resources (Vohs & Faber, 2005). Whether from regulating attention, stifling thoughts, or modifying one’s behavior to appear emotional, people who have engaged in self-control earlier are more likely to buy impulsively. Perhaps the most intriguing result of this line of research is that decreases in the self’s controlled processes strengthen the feeling to buy impulsively. Theoretically, the strength of the urge and inhibitions on that urge have been considered to be orthogonal, but to detect a change in the potency of the impulse with depletion suggests that empirically the two core components of self-control may be intricately related. Research at the intersection of the urge and the self’s regulatory resources (Vohs & Mead, in preparation) presents an exciting new avenue of study.

Thus far we have discussed about impulsive consumption in the context of purchasing. Impulses may also affect what people consume in another fashion, namely watching movies. The core idea behind this research (Novemsky & Baumeister, 2005) was that at times choosing a more virtuous option may require overriding an impulse to do something nonvirtuous, and so
Self-regulation is required for choosing the path of virtue. In one study, Novemsky and Baumeister (2005) offered students a choice between a movie to watch (for later, not immediate viewing), and the options contained either intellectually edifying fare and lowbrow sleaze. These options were presented either before or after an intensive study session, which was assumed to be somewhat depleting. Different levels of depletion were inferred based on study time in the library (that is, by having students make the choice as they first approached the library to begin the evening’s studying, or as they departed after several hours of work) or were experimentally manipulated by having participants make a brief series of choices and decisions (e.g., Vohs et al., 2005). Sure enough, when students were fresh and their resources were not depleted from studying, they exhibited a marked preference for the highbrow films. After a study session, however, they shifted heavily toward the lowbrow fare.

The implication is that some consumer decisions present a challenge between higher and lower impulses. Self-regulation enables human beings to override the latter sort of impulse in order to pursue the former. But when self-regulatory resources have been depleted, preferences shift toward the less virtuous product.

Making Intelligent Decisions

The ability to make the right decision should (by definition) free consumers from a great deal of regret. Because the ‘right’ option is not always readily apparent when one faces a decision, the human psyche has developed highly intelligent methods for determining the best answer, such as cost-benefit analyses. For instance, consumer theorists recognize that consumers’ attempts to control consumption frequently entail assessing a decision’s economic costs (Hoch & Loewenstein, 1991). As we have already said, both decision making and self-
regulation are crucial aspects of the self’s executive function, and both seem to consume the same resource (Baumeister, 1998). The agentic self must oversee the active parts of the decision making process, such as problem solving, but it is not involved in automatic information processing actions such as categorization. Indeed, one review of the problem solving literature (Crinella & Yu, 2000) concluded that almost all problem solving requires executive functioning. On that basis, Schmeichel, Vohs, and Baumeister (2003) proposed that the logical style of problem solving, with its inefficient manner but high-quality output, would be deeply related to self-regulatory resources. The fewer resources people have, they predicted, the worse they would be able to solve problems.

The first test of the hypothesis involved a standard attention control task in which participants’ attentional abilities were challenged by having to ignore distracting words during a video they were to be watching or being allowed to gaze at the distractors as much as they wished (similar to the method described earlier). Next, participants solved problems from the analytical section of the Graduate Record Examination (GRE), an entrance exam required to apply to most graduate studies programs. The results showed clear support for the hypothesis, in that participants who had earlier controlled their attention completed fewer GRE problems, got fewer problems correct, and overall achieved a worse effort/speed trade off quotient as compared to participants whose earlier task did not involve self-control (Schmeichel et al., 2003).

Another experiment tested the idea that only higher-order, intelligent processing would be interrupted by self-regulatory resource depletion by including a task that required a rudimentary mental task as well one that needed more advanced thinking. In this study, the manipulation of self-regulatory resources was followed by the reading comprehension section of the GRE and a nonsense syllable task, which is used often in cognitive science as a working
memory task (note that the tasks were counterbalanced in order). In the former task, participants read a passage about Toni Morrison’s writings and her identity as a black female author and in the latter participants were asked to read a list of 15 nonsense words and memorizing them in the space of 60 seconds. As expected, self-regulatory resource depletion condition related to ability to correctly work out the answers to the reading comprehension questions but was unrelated to memorization skills.

Thus far we have presented evidence that depletion impairs intelligent thought. But does it actually alter decision making? A series of studies by Amir, Dhar, and Baumeister (2005/unpublished) had participants first undergo a brief depletion manipulation and then confront one of several standard decision problems. The results suggested that ego depletion brought on by brief acts of self-control can shift decision making toward simpler, lazier, and more superficial styles of decision making. Several such patterns were observed. First, depleted participants seem less inclined to face up to tradeoffs in a cognitively complex, integrative manner. Simonson (1989) proposed that choosing a compromise option requires more cognitive work than simply choosing an extreme one, because the compromise requires the person to process multiple, conflicting criteria and trade some degree of one for some measure of the other. Amir et al. (2005) found that depleted participants were more likely to choose extreme options over compromise ones, as compared to non-depleted participants.

Second, depleted participants showed a stronger version of the asymmetric dominance effect (also called the attraction effect; Huber, Payne, & Puto, 1982). This effect can be understood in the context of a decision problem that has both an easy and more difficult choice. That is, it is a choice between three options, two of which are quite different in specific attributes but similar in overall quality (hence the difficult choice), and the third is a decoy that is clearly
inferior to one of the other options on all attributes (the easy choice). Depleted participants avoided the difficult choice by letting the easy decision stand in for the difficult one as well. In other words, depleted participants were more likely than others to pick the item that was superior to the decoy.

Third, depleted participants were more likely than others to choose to do nothing. In this pair of studies, participants were asked to choose between two products (e.g., two cell phones) but also had the option of taking neither and “going to another web site.” Whereas nondepleted participants would often make a selection from what was offered, depleted ones tended to avoid the choice.

The bottom line is that making decisions can be an effortful, thoughtful task in which the various product options and attributes are carefully weighed and compared — but this sort of decision process requires considerable resources. When people’s resources have been depleted by prior acts of self-control, people shift toward more simplistic and less effortful styles of choosing. They become more prone to biases, and they also become more prone to choose not to choose anything.

In short, consumers’ ability to make good decisions depends on the extent to which they have previously engaged in self-control. When consumers inhibit impulses or force themselves to do what they do not want to do, they will be less prepared to make rational decisions, especially under circumstances of complex layers of information. Decision making, then, is more than a function of opportunity or willingness, this research implies, but also executive functioning ability.
Decision Making Makes Consumers Vulnerable to a Loss of Self-Control

In the previous section, we examined rational decision making as an outcome of self-regulatory resource depletion. In the current section, we look at the opposite side of that equation, whether making choices affects subsequent self-control.

Recall that we described the relationship between decision making and self-regulation as related to their constituency as components of executive control. To be clear, by decision making we mean the type of active, option-weighing, high-level processing that was studied in the work by Schmeichel et al (2003). Willfully engaging in control over oneself would seem to naturally relate to exerting control over the environment in the form of making choices.

Extant findings suggest that although people generally like the idea that they have control over their life outcomes, at the time same people may find making choices onerous. Consider, for example, the coffee company Starbucks who in 2003 boasted that each store offered consumers over 19,000 beverage “possibilities” and that the number was growing with the introduction of their new superheated option. Contrast Starbucks’ underlying assumption (that more options are good) with the now-seminal work by Iyengar and Lepper (2000) who showed that shoppers who were given 24 varieties of jam, as opposed to six varieties, were less likely to buy jam at all and were more dissatisfied when they did make a purchase. The rational choice model would likely say that having more options is better for consumers because each option increases the potential for preference-matching. Although this may be true relative to conditions under which no options are available, more likely is that people today view the proliferation of choice with distress, resulting in what Schwartz (2000) refers to as “the tyranny of freedom.” Hence, Vohs and colleagues set out to test whether active decision making renders ensuing self-control less successful due its debilitating effect on ego resources. Their research included eight studies that
converged on the conclusion that making choices depletes self-regulatory resources.

In one study participants made a series of binary choices between different versions of household products. For instance, participants in the choice condition were asked to choose between different colors of t-shirts, different colors of socks, and differently-scented candles. Participants in the no-choice condition were asked to give their opinions on eight advertisements taken from popular magazines. Thus, participants in both conditions were asked to evaluate the stimuli and engage in detailed thought processing, but only in the binary choice condition did participants render a decision. For the second task, participants were taken to a second room with a new experimenter and asked to hold their arm in a tank of freezing cold water for as long as they could, a task called the cold pressor task. As would be predicted on the basis of a limited-resource model of self-control, participants who had previously made decisions were less able than were participants who had not had to make choices to keep their arm submersed in icy cold water. A second experiment that also used this manipulation found that participants in the choice condition, as opposed to non-choice condition, procrastinated longer when they could have been studying for an upcoming intelligence test.

In two additional studies, participants made decisions about the course in which they were currently enrolled, or they simply evaluated similar aspects of the course. Afterwards, they attempted to solve unsolvable puzzles (in one study) or were asked to perform mathematic problems (in another study). In line with the previous findings, these experiments showed that participants who made decisions about how the course should be run persisted less at the subsequent puzzle, as well as attempted fewer math problems and got fewer correct, as compared to participants who only evaluated aspects of the course.

There were several confounds with the laboratory experiments, namely the idea that
being in the choice condition primed the idea of choices, which led to participants in that
case being more aware of their ability to choose to stop the second task. To get around that
alternate explanation, Vohs et al went to a local mall and asked shoppers to complete a
questionnaire about how much they had made choices throughout their shopping trip that day.
Then they asked the same shoppers to complete as many 3 digit + 3 digit addition problems as
they could. A second experimenter surreptitiously recorded the length of time spent on the math
problems, and this measure in addition to number of problems attempted was the indicator of
self-control ability. As expected, shoppers who said that they had made many active choices
were less persistent at the math problems, both in terms of number of problems attempted and
duration, than were shoppers who said they had made fewer choices. This effect held even when
statistically controlling for amount of time spent shopping and other pertinent variables such as
age and gender. Given that all shoppers were exposed to the same scale that would have primed
them with the same choice-related concepts, it is unlikely that a simple priming effect could
explain the naturalistic experiment. In other words, this field study showed that compared to
consumers who had made fewer choices during their shopping trip, those
who had made multiple choices were less able to engage in the self-control needed to persevere
at tedious math problems in the middle of a shopping mall.

In short, because the executive aspect of the self is involved in both decision making and
controlled processes, the two functions are intimately related. This interrelation means that when
one is engaged, the other is later impaired. The assumption is that self-regulatory resources
grease the wheel for both decision making processes and controlled processes to operate
smoothly. If there are fewer self-regulatory resources due to decision making, self-regulation will
be crippled; and as we saw earlier, if there are fewer self-regulatory resources because of more
basic acts of self-control, decision making will be poorer. Studies showing how easily goal attainment can be thwarted hint at the preciousness and fragility of self-regulatory resources.

**SUMMARY**

Setting standards or goals is the first important step in self-regulation. If people see that their current state is discrepant from their desired goal state, they may engage in behavior to try to meet their goal. In order to be effective at producing behavior change, goals should be specific, consistent, and attainable. People need to be motivated to change, and see themselves as capable of changing, in order for effective self-regulation to occur.

Not only does one need to have standards for self-regulation, one needs to monitor one’s progress toward meeting those standards. Monitoring involves being aware of the self’s behavior or responses and comparing them to the standard. Keeping track of one’s purchases by keeping a running total of the dollar amount spent is an example of monitoring one’s consumer spending. Monitoring allows people to assess distance to the goal. Effective monitoring requires accurate and reliable feedback about one’s progress toward the goal. Breakdowns in monitoring are a key reason that goals are not met, and improved monitoring is one of the best ways to improve self-control in all spheres.

Even if a consumer has specific, consistent, and appropriate standards and monitors his or her behaviors, the goal will not necessarily be met. Willpower or self-control strength is necessary to bring behavior in line with the standard. Self-control functions like a muscle that can be depleted with use but strengthened over time. Self-regulation is governed and limited by a finite supply of energy or strength that is used for all controlled responses and actions (as well as
for other executive functions, such as making choices). Engaging in one self-control task leaves less energy available for subsequent self-control tasks.

Self-control can affect consumers in areas as varied as eating, spending, and making choices and decisions (including purchasing decisions). If people have to restrain their eating when they are hungry for dietary or other reasons, they use some of their self-control energy and thus have less of this resource available subsequently to engage in other self-control tasks. Likewise, people who engage in initial acts of self-control may be less able to control their eating. People whose self-regulatory capacity is reduced by engaging in self-control tasks of various kinds are more likely to make subsequent impulsive purchases and to choose self-indulgent products than people whose self-control was not depleted.

Self-regulatory resource depletion brought on by brief acts of self-control was found to impair intelligent thought and shift decisions toward simpler, lazier, and more superficial styles of decision making. This research implies that decision making is more than just a function of opportunity or willingness; decision making is also executive functioning ability. Not only does engaging in self-control affect subsequent decision making, but decision making can affect self-control as well. Active decision making can render subsequent self-control less successful due its depleting effect on self-regulatory resources. Self-regulatory resources provide the energy for both active decision making and a wide variety of self-control tasks.
Footnotes

1. Although the original research compared obese versus nonobese consumers, Herman, Olmstead, and Polivy (1983) revolutionized research on eating with their insight and empirical data that chronic dieting is the driver of most of the effects found between obese and nonobese participants, due to the fact that the obese people were very often chronically dieting. When the analyses were conducted using restrained eaters (the technical term for chronic dieters) versus nonrestrained eaters, this distinction captured the lion’s share of the variance in terms of past research on obese versus nonobese participants.


